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ABSTRACT

An advanced General Education Program has been designed to prepare an individual with the information, concepts, and general knowledge required to successfully pass the American Council on Education's High School General Education Development (GED) Test. The Advanced General Education Program provides comprehensive self-instruction in each of the following areas: (1) Correctness and effectiveness of Expression, (2) Social Studies, (3) Natural Sciences, (4) Interpretation of Literary Materials, and (5) General Mathematics. This document covers tables, graphs, and line graphs. (CK)

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PM 431 - 28

# ADVANCED GENERAL EDUCATION PROGRAM

## A HIGH SCHOOL SELF-STUDY PROGRAM

**TABLES AND GRAPHS**

LEVEL: II

UNIT: 1

LESSON: 1

AC0 140 43

U.S. DEPARTMENT OF LABOR
MANPOWER ADMINISTRATION, JOB CORPS
NOVEMBER 1969

U.S. DEPARTMENT OF LABOR
MANPOWER ADMINISTRATION, JOB CORPS
NOVEMBER 1969

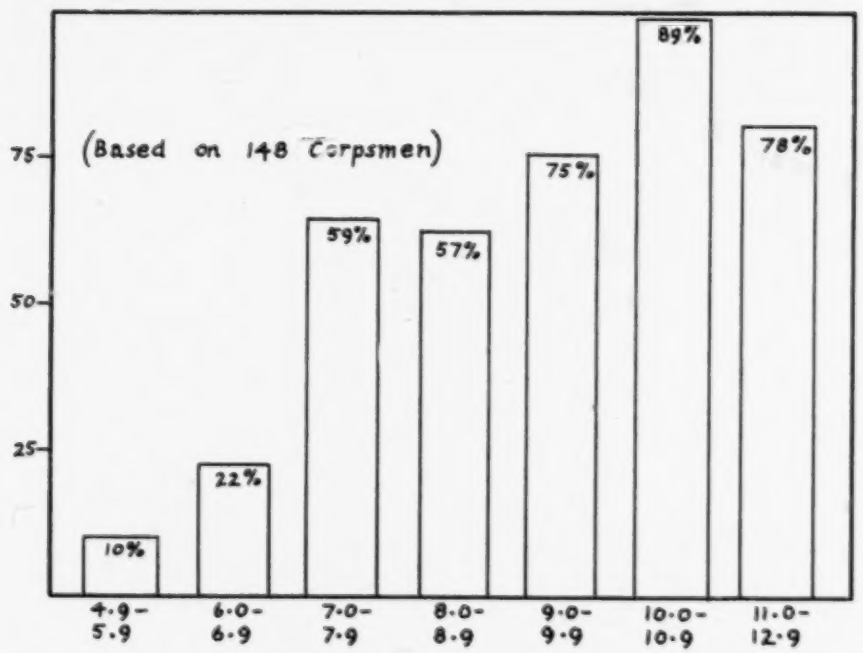
You may have heard the saying, "A picture is worth a thousand words." This saying is true in more ways than one. A picture often shows a landscape, a person, or a scene more accurately than words can describe them. A picture can also convey information. You have already learned to read maps. They are a type of picture that conveys information. In the next few lessons you will learn to read two other types of information - pictures, tables and graphs. You may have seen tables and graphs in newspapers, advertisements or television commercials. They are used often because they present information in clear, condensed* form that is easy to read and appreciate.

Here is some information that should certainly be of interest to you: a study that showed whether a Corpsman who received a certain score on the Stanford Achievement Test had a good chance of passing the GED. The report giving this information is based on a comparison of the scores of 148 Corpsmen who took both tests. It was found that only 10% of the Corpsmen who scored between 4.9 and 5.9 on the Stanford Achievement Test passed the GED test; 22% of those who scored between 6.0 and 6.9 passed; 59% of those who scored between 7.0 and 7.9 passed; 57% of those who scored between 8.0 and 8.9 passed; 75% of those who scored between 9.0 and 9.9 passed; 89% of those who scored between 10.0 and 10.9 passed; and, 78% of those who scored between 11.0 and 12.9 passed. Now go on to the next page.

*Condensed means shorter and more compact.

Here is another way of presenting the information you just read; putting the figures on a bar graph.

Percent Of Corpsmen Within Each Scoring Group Who Passed The GED Exam




GED Figure #2. Percent of Corpsmen within each arithmetic average category who met the minimum score requirements of their home state on the GED.

You can probably see right away the advantages of the graph over the written version.

First of all, you can find the numbers much more easily on the graph than in the written paragraph. And, you can tell more quickly what they are about. In the graph you can see all the information spread out before you in a single glance. You can see the whole picture more clearly than you can from reading the written report. Even more important, the picture suggests to your eye relationships and comparisons that the report doesn't mention. For example, two scoring groups did about equally as well. There was more than 10% difference between the scoring group which did best and the second best scoring group. You can see how much better the best scoring group did than

the worst. These are important considerations in estimating the value of the Stanford Achievement Tests. Do Corpsmen who score high on the SAT have a better chance of passing the GED tests than Corpsmen who score low? A much better chance? Or is there very little difference between those who score very high on the SAT and those who just score in the medium range?

If you had to answer the above question by looking at the written report, you could if you worked hard at it. All the facts are there. But if you try to answer the question by looking at the graph, it's much easier. Here the answers are drawn out before your eyes much more strikingly. You do not have to hunt through many words and numbers to find what you are looking for in order to compare the figures. On the graph, the comparison is almost made for you.

There are numerous different kinds of graphs and tables (which, as you will see, are similar to graphs). In the next lessons you will learn how to read several types of graphs and tables.

Time completed _____

| | Column 1 | Column 2 | Column 3 |
|---|---|---|---|
| | Month | San Francisco | Los Angeles |
| Row 1 | March | 11.0 inches | 8.5 inches |
| Row 2 | April | 6.4 inches | 3.2 inches |
| Row 3 | May | 4.0 inches | .5 inches |

PANEL 1, AVERAGE MONTHLY RAINFALL IN LOS ANGELES AND SAN FRANCISCO

1.

REFER TO PANEL 1 (Page 4).

Tables present information in clear form that is easy to read. When interpreting tables, you should <u>first</u> look at the title. The title tells you what information is being presented in the table.

The table in Panel 1 gives you information about:

- ☐ the amount of rain that fell during a hurricane in San Francisco and Los Angeles
- ☐ the average daily rainfall in the United States
- ☐ the average monthly rainfall in San Francisco and Los Angeles
- ☐ the average snow accumulation in San Francisco and Los Angeles

the average monthly rainfall . . .

2.

REFER TO PANEL 1

The table you are looking at is divided into <u>rows</u> and <u>columns</u>.

The columns run from:

- ☐ right to left
- ☐ top to bottom

top to bottom

How many rows are there? _____

3

Each row gives information about a different:

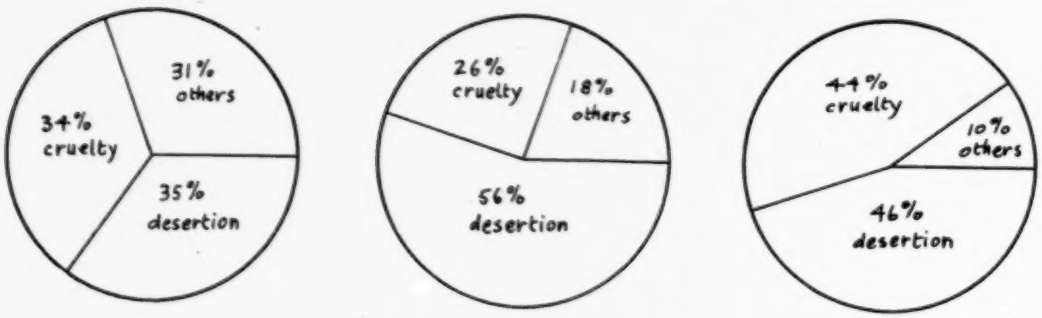
- ☐ city
- ☐ month
- ☐ state

month



7

GROUNDS FOR DIVORCE IN MINNESOTA




1875 1900 1925

10. In which year did the largest percentage of divorces claim the legal ground of desertion*?

_____

11. In which year did the lowest percentage of divorces claim legal grounds other than desertion or cruelty?

_____

*Desertion means leaving, in this case, a husband leaving his wife.

Time completed _____

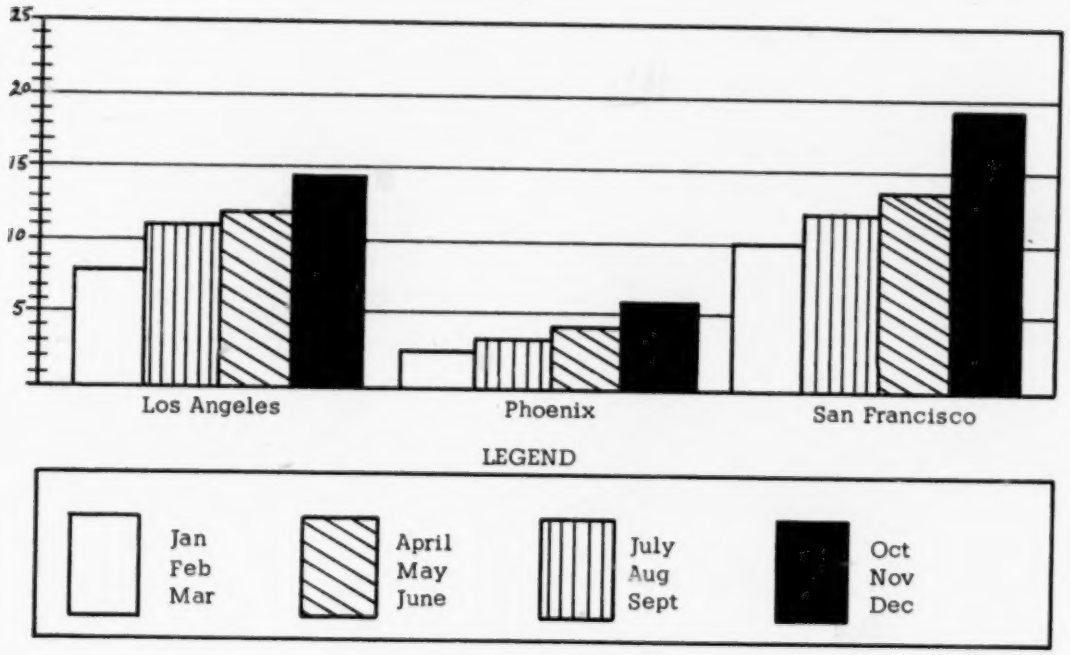
WHEN YOU HAVE FINISHED THIS TEST, WRITE DOWN THE TIME. THEN TAKE THE LESSON TO YOUR INSTRUCTOR OR HIS ASSISTANT FOR CHECKING. WAIT UNTIL THE LESSON IS APPROVED BEFORE GOING ON TO THE NEXT LESSON.



* U. S. GOVERNMENT PRINTING OFFICE : 1970 O - 389-835

| | |
|---|---|
| 3.<br><br>REFER TO PANEL 1<br><br>In order to find specific information in a table, you have to look for the correct column and the correct row.<br><br>If you were looking for information about rainfall averages in San Francisco you would look in the column that is numbered ____.<br><br>If you were looking for rainfall for the month of May, you would look in row _____.<br><br>What is the average rainfall in <u>Los Angeles</u> for the month of May? _____ | 2<br><br>3<br><br>.5 inch |

AVERAGE RAINFALL IN THREE U.S. CITIES




6. What is the average rainfall in Phoenix during April-May-June?

_____

7. During the months of October-November-December, which city has about one-third as much rain as San Francisco?

_____

8. In which months does Los Angeles have the least rain?

_____

9. How much rain does Los Angeles get during its <u>wettest</u> months?

_____

10

| | |
|---|---|
| 4.<br><br>REFER TO PANEL 1<br><br>Which city has more rainfall in March?<br><br>☐ Los Angeles<br>☐ San Francisco<br><br>In Los Angeles, which month has more rainfall:<br><br>☐ March<br>☐ May | San Francisco<br><br>March |
| 4a.<br><br>REFER TO PANEL 1<br><br>How much more rain fell in Los Angeles during March than during May? _____ | 8 inches |
| 4b.<br><br>REFER TO PANEL 1<br><br>What is the <u>total</u> of the average rainfall in San Francisco for the three months? (To find out, add the three figures.) _____ | 21.4 inches |
| 4c.<br><br>REFER TO PANEL 1<br><br>What is the average monthly rainfall for Los Angeles for thethree months ? (To find out, get the total for the three months and divide it by 3. Round off your answer to the nearest tenth.)_____ | 4.1 inches |

Egg and Chicken Production: 1955 - 1960

| Year | EGGS | | CHICKENS | |
|---|---|---|---|---|
| | No. produced (in millions) | Average price per doz. (cents) | No. produced (in thousands) | Average price per lb. (cents) |
| 1955 | 59,000 | 39 | 338,000 | 19 |
| 1956 | 61,000 | 39 | 398,000 | 16 |
| 1957 | 60,000 | 36 | 315,000 | 14 |
| 1958 | 61,000 | 38 | 352,000 | 14 |
| 1959 | 62,000 | 31 | 370,000 | 10 |
| 1960 | 63,000 | 35 | 370,000 | 12 |

1. How many chickens were produced in 1960?

2. What was the average price of eggs for 1955?

3. In 1959, how much higher was the average price of a dozen eggs than that of a pound of chicken?

4. Approximately how many times greater was the price of a pound of chicken in 1955 than it was in 1959?

   a. ☐ 1-1/2 times
   b. ☐ 2 times
   c. ☐ 2-1/2 times
   d. ☐ 3 times

5. What was the <u>average</u> price of a pound of chicken for the three years, 1958, 1959, and 1960?

| | |
|---|---|
| 5.<br><br>REFER TO PANEL 1<br><br>What is the average rainfall <u>for the two cities</u> during the month of April? _____ | 4.8 inches |
| 5a.<br><br>REFER TO PANEL 1<br><br>How many times greater is the average rainfall in San Francisco than in Los Angeles during April?<br><br>☐ 2 times<br>☐ 3 times<br>☐ 10 times | 2 times |
| 5b.<br><br>REFER TO PANEL 1<br><br>Which city has the larger average rainfall for May?<br><br>☐ Los Angeles<br>☐ San Francisco<br><br>How many more inches does that city get? _____ | San Francisco<br><br>3.5 inches |
| 5c.<br><br>REFER TO PANEL 1<br><br>What is the average rainfall in San Francisco for the three months? (Round off your answer to the nearest tenth.) _____ | 7.1 inches |

| Row | Player & Team | COLUMN 1<br>At Bat | COLUMN 2<br>Hits | COLUMN 3<br>Batting Average | COLUMN 4<br>Runs Batted In | COLUMN 5<br>Home Runs |
|---|---|---|---|---|---|---|
| 1 | F. ROBINSON, BALT. | 576 | 182 | .316 | 122 | 49 |
| 2 | OLIVA, MINN. | 622 | 191 | .307 | 87 | 25 |
| 3 | SNYDER, BALT. | 373 | 114 | .306 | 41 | 3 |
| 4 | STANLEY, DET. | 235 | 68 | .289 | 19 | 3 |
| 5 | KALINE, DET. | 479 | 138 | .288 | 88 | 29 |
| 6 | MANTLE, N.Y. | 333 | 96 | .288 | 56 | 23 |

PANEL 2, AMERICAN LEAGUE BATTING LEADERS, 1966

| | |
|---|---|
| 6.<br><br>REFER TO PANEL 1<br><br>This table indicates that the climate in San Francisco is:<br><br>☐ drier than the climate of Los Angeles<br>☐ wetter than the climate of Los Angeles<br><br>If someone were deciding whether to move to Los Angeles or San Francisco, and disliked damp weather, he would choose:<br><br>☐ Los Angeles<br>☐ San Francisco | 12<br><br>wetter than the climate . . .<br><br>Los Angeles |
| 7.<br><br>REFER TO PANEL 2<br><br>The title of this table tells you it contains information about:<br><br>☐ major league batters for 1966<br><br>☐ American League batting leaders for 1966<br><br>☐ major league home run champions for 1966<br><br>☐ American League pennant winners for 1966<br><br>In which column would you look to find a player's batting average? _____<br><br>In what row is Al Kaline? _____<br><br>What was his batting average for 1966? _____<br><br>How many home runs did he hit? _____ | <br><br><br><br>American League batting . . .<br><br><br><br>3<br><br>5<br><br>.288<br><br>29 |

## MASTERY TEST

Time started _____

16

| | |
|---|---|
| 8.<br><br>REFER TO PANEL 2.<br><br>Which player had the most at bats for 1966?<br>_____<br><br>Who hit the most home runs? _____<br><br>How many American League batters hit over .300? ____ | <br><br><br><br>Oliva<br><br>F. Robinson<br><br>3 |
| 9.<br><br>REFER TO PANEL 2<br><br>The "cleanup man" in the lineup is usually a power hitter, which means he hits many home runs. If you had to pick a "cleanup man" from the three men listed below, who would be the best choice?<br><br>☐ Kaline<br>☐ Snyder<br>☐ Stanley | <br><br><br><br><br><br>Kaline |
| 10.<br><br>REFER TO PANEL 2<br><br>What was the <u>total</u> number of home runs for all the American League leaders? _____<br><br>What was the <u>average</u> number of home runs hit by the American League leaders in 1966? _____ | <br><br><br><br>132<br><br>22 |
| 11.<br><br>Tables usually present information in a particular <u>order</u>. The first table presented rainfall averages month-by-month for March, April, and May. The order in that table was based on:<br><br>☐ highest amount of rainfall<br>☐ time sequence | <br><br><br><br><br><br>time sequence |

33.

REFER TO PANEL 7

Which of the cities have more Negroes than whites?

_____

none

(or equivalent response)

From this graph, you can see that the percentage of Negroes is higher in:

- ☐ northern cities
- ☐ southern cities

southern cities

Time completed _____

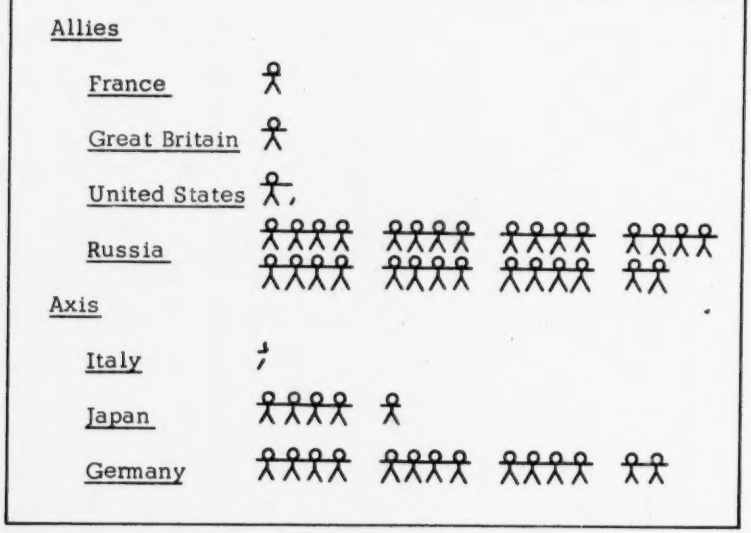
YOU HAVE NOW FINISHED THE FIRST PART OF THIS LESSON. WRITE DOWN THE TIME. THEN, AFTER YOU HAVE REVIEWED THE MAIN IDEAS IN THE FOREGOING LESSON, TAKE THE MASTERY TEST AT THE END OF THE BOOKLET.

| | |
|---|---|
| 12.<br><br>REFER TO PANEL 2<br><br>In tables that give figures about people, the people are often listed in alphabetical order. You can see that the names on Panel 2 are not in alphabetical order.<br><br>LOOK AT Column 3.<br><br>The players in this table are listed in order of their:<br><br>☐ batting average<br>☐ number of hits<br>☐ number of home runs<br>☐ number of R.B.I.'s | batting average |
| 13.<br><br>INFORMATION FRAME<br><br>You are now going to learn how to read information presented in graph form. A graph, like a table, presents information in condensed form that is easy to read.<br><br>You will see that a graph differs from a table because a graph is more like a picture. A table gives columns of figures to tell the story, while a graph shows it to you by patterns of lines, bars or other symbols.*<br><br>NO RESPONSE REQUIRED<br><br>*Symbol in this context means a sign or a picture that represents something else. | GO ON TO THE NEXT FRAME |

Table of World War II Battle Deaths as Percentage of Total Armed Forces

| | Nation | Total Armed Forces | Battle Deaths | Percentage |
|---|---|---|---|---|
| Allies | United States | 12,300,000 | 290,000 | 2.4% |
| | France | 5,000,000 | 210,000 | 4.2% |
| | Great Britain | 5,100,000 | 250,000 | 4.9% |
| | Russia | 12,500,000 | 7,500,000 | 60.0% |
| Axis | Italy | 3,750,000 | 75,000 | 2.0% |
| | Japan | 6,100,000 | 1,200,000 | 19.5% |
| | Germany | 10,200,000 | 3,500,000 | 34.0% |

Symbol Graph of Battle Deaths for Major Countries that Fought in World War II




LEGEND Each figure = approximately 250,000 deaths

PANEL 3, BATTLE DEATHS IN WORLD WAR II

14.

REFER TO PANEL 3 **(Page 13).**

Panel 3 shows you similar information presented in two different ways:

- in a table
- in a symbol graph

LOOK at both briefly. Which gives you a picture right away of what countries had the most battle deaths?

- ☐ symbol graph
- ☐ table

symbol graph

The table in Panel 3 gives you information about all of the following <u>except</u>:

- ☐ battle deaths as a percentage of total armed forces for certain nations during World War II
- ☐ size of armed forces of certain nations during World War II
- ☐ number of battle deaths of certain nations during World War II
- ☐ total wounded during World War II

total wounded during . . .

The <u>symbol graph</u> in Panel 3 gives you information about:

- ☐ battle deaths as a percentage of total armed forces of certain nations during World War II
- ☐ number of battle deaths of certain nations during World War II

number of battle deaths . . .

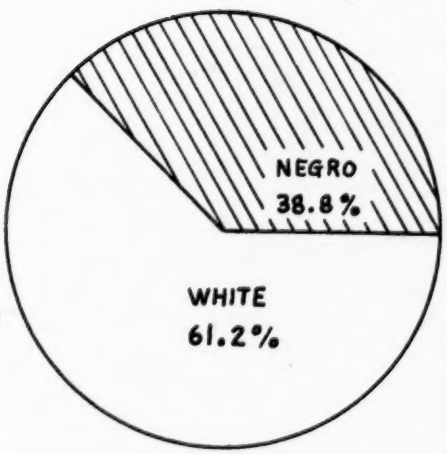
- ☐ size of armed forces of certain nations during World War II

NOTE: **Skip one(1) page to find page 15.**

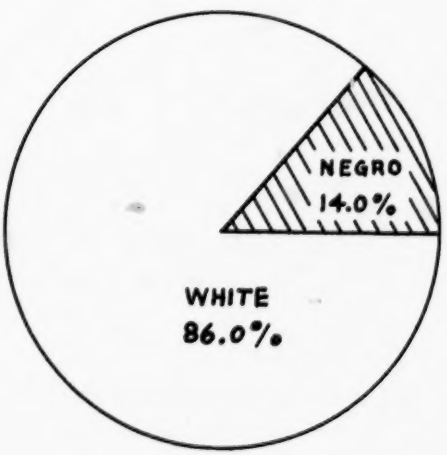
| | |
|---|---|
| 32.<br><br>REFER TO PANEL 7<br><br>This graph gives you information about the:<br><br>☐ Negro population of the United States<br>☐ number of Negroes in four cities<br>☐ percentage of Negroes in four cities | percentage of Negroes . . . |
| 32a.<br><br>REFER TO PANEL 7<br><br>The city having the largest percentage of Negroes is _____.<br><br>The city having the smallest percentage of Negroes is _____. | Atlanta<br><br>Milwaukee |

31

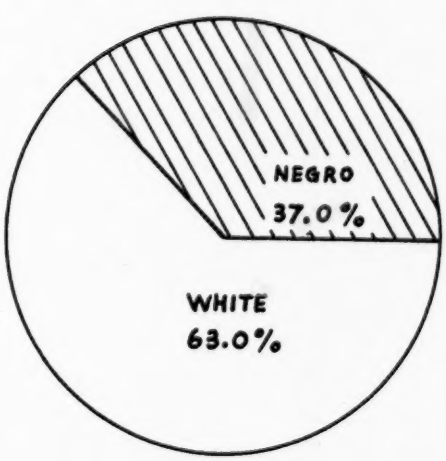
PANEL 7, PERCENTAGE OF NEGRO POPULATION OF FOUR CITIES



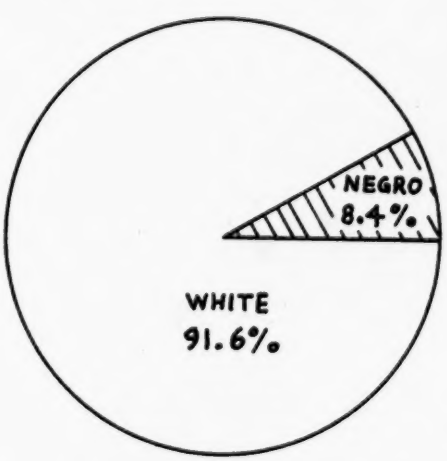

Atlanta, Georgia




New York, New York



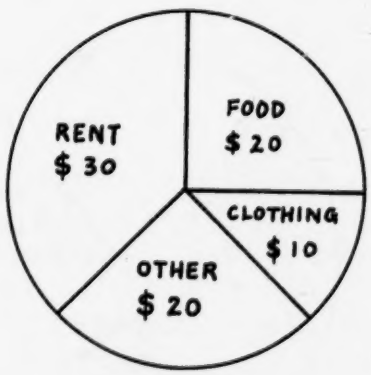

Memphis, Tennessee




Milwaukee, Wisconsin

31.

Another type of graph used to give a picture of something is a circle graph. It shows how a whole may be divided. In the graph below, for example, you can see how a man's income of $80 a week is divided into expenditures (what he spends) on food, rent, clothing, and miscellaneous (other).

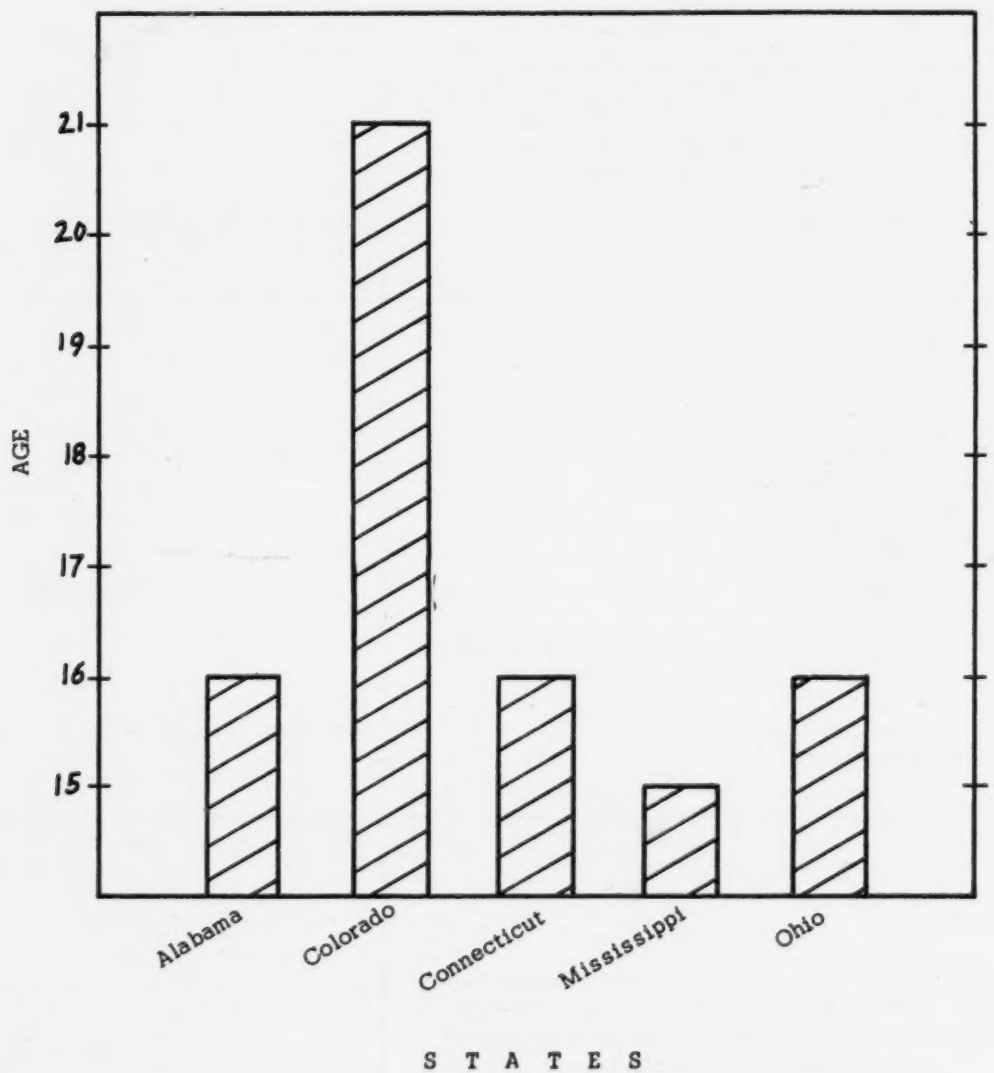



According to the graph, the man spent the largest portion of his income on _____.

rent

| | |
|---|---|
| 15.<br><br>VOCABULARY FRAME<br><br>REFER TO PANEL 3 (Page 13).<br><br>On the table and the symbol graph, you will see the terms Allies and Axis. The paragraph below defines these terms:<br><br>The terms Allies and Axis refer to the opposing sides during World War II. The major Axis nations were Germany, Italy, and Japan. The major Allied nations were the United States, Great Britain, France, and the Soviet Union (Russia).<br><br>NO RESPONSE REQUIRED | GO ON TO THE NEXT FRAME |
| 16.<br><br>REFER TO PANEL 3<br><br>In the lower right-hand corner of the symbol graph is a legend. What does the legend tell you?<br><br>☐ the number of Allies in World War II<br>☐ the number of countries in World War II<br>☐ the number of deaths each symbol represents<br><br>LOOK at the symbol for Italy on the graph. It tells you that the number of battle deaths in Italy was:<br><br>☐ less than 250,000<br>☐ more than 250,000 | . . . each symbol represents<br><br>less than 250,000 |
| 17.<br><br>REFER TO PANEL 3<br><br>When you are interpreting a symbol graph, you may have to do some arithmetic if you want an idea of the total figures involved. But, if you want to get a picture of what these figures mean, the symbols show a picture at first glance. LOOK at the symbols. You can tell immediately which country had the most battle deaths in World War II. It was _____. | Russia |

PANEL 4, MINIMUM DRIVERS' AGE IN FIVE STATES



18.

REFER TO PANEL 4 (Page 16).

The graph you see on this panel is called a bar graph. There are figures on the right side of the graph and names at the bottom of the graph.

What do the figures stand for? _____ age

The height of each bar shows you how old a person has to be to receive a driver's license in certain _____. states

The bar for Alabama reaches to the line for what age? _____ 16

This means that the minimum age for getting a driver's license in Alabama is 16.

Which other states have a minimum age of 16?

a. ☐ Colorado

b. ☐ Connecticut Connecticut

c. ☐ Mississippi

d. ☐ Ohio Ohio

| | |
|---|---|
| 30.<br><br>REFER TO PANEL 6<br><br>To get an idea of the actual numbers of people divorced in these states, you may refer to the scale on the left of the graph.<br><br>150 on this scale means:<br><br>☐ 150<br>☐ 150,000 (150 thousand)<br>☐ 150,000,000 (150 million) | 150,000 (150 thousand) |
| 30a.<br><br>REFER TO PANEL 6<br><br>What was the approximate number of divorces in California?<br><br>☐ 55,000<br>☐ 57,000<br>☐ 60,000 | 57,000 |
| 30b.<br><br>REFER TO PANEL 6<br><br>What is the <u>average</u> number of divorces for the four states?<br><br>☐ 15,000<br>☐ 20,000<br>☐ 33,000<br>☐ 38,000 | 33,000 |

19.

REFER TO PANEL 4

Once you know what the bars on the graph stand for, you can see at a glance that:

- ☐ all states have the same age requirement
- ☐ different states have different age requirements

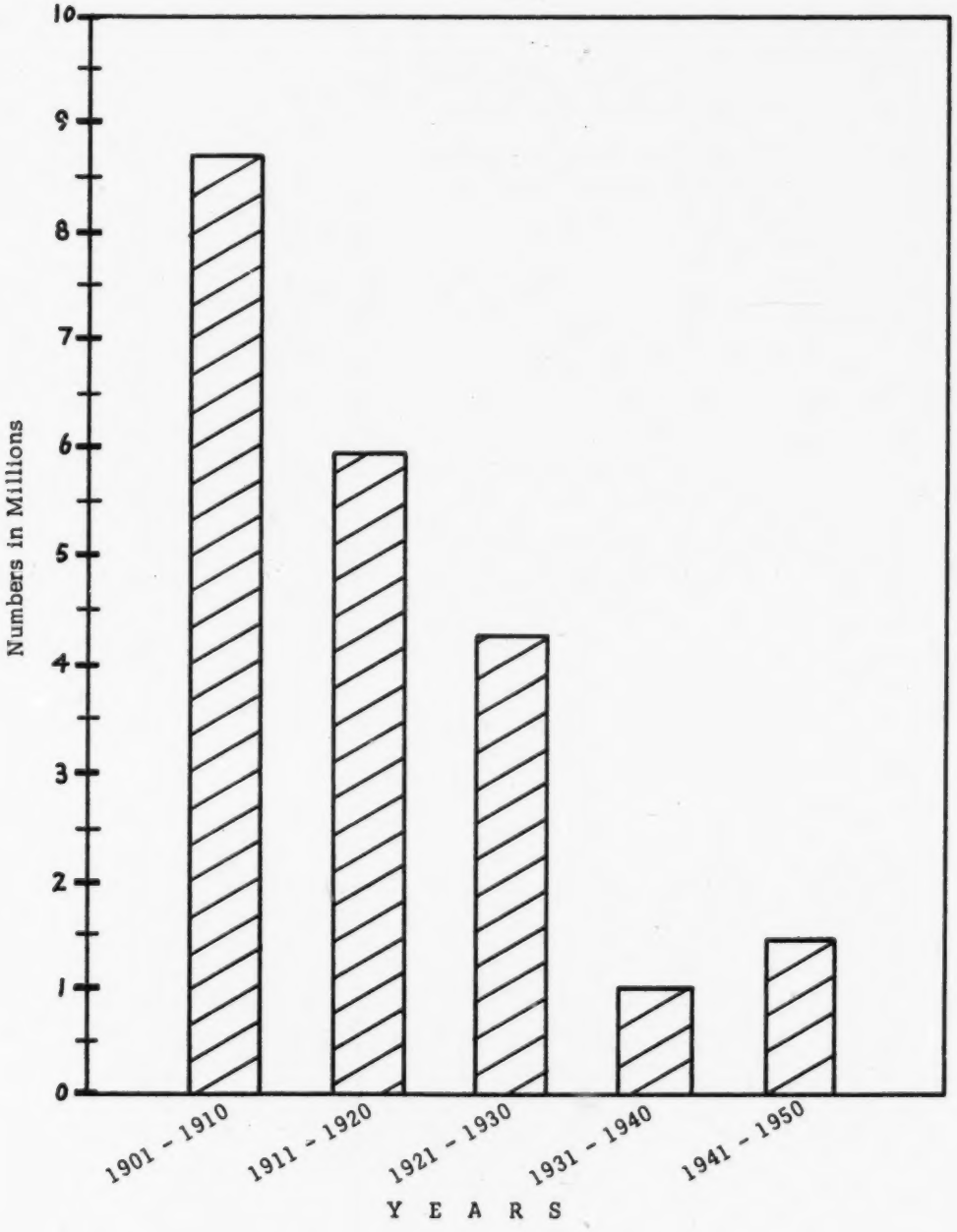
different states have different ...

You can also tell right away which state has the highest minimum age and which has the lowest. They are:

(highest) _____ Colorado

(lowest) _____ Mississippi

PANEL 5, IMMIGRANTS* ADMITTED INTO THE UNITED STATES DURING THE FIRST HALF OF THE 20TH CENTURY




*An immigrant is a person who comes into a foreign country to make his home there.

| | |
|---|---|
| 20.<br><br>REFER TO PANEL 5 (Page 19).<br><br>The title of the panel tells you that this graph gives a picture for the first 50 years of this century of how many people:<br><br>☐ came from foreign countries to live in the United States<br><br>☐ entered the United States<br><br>☐ left the United States to live in foreign countries | came from foreign countries ... |
| 21.<br><br>REFER TO PANEL 5<br><br>LOOK at the figures along the bottom of the graph. They tell you that each bar stands for a period of:<br>☐ 5 years<br>☐ 10 years<br>☐ 15 years | 10 years |
| 21a.<br><br>REFER TO PANEL 5<br><br>At the side of the graph is a scale; it tells you that the height of the bar represents:<br><br>☐ hundreds of immigrants<br>☐ thousands of immigrants<br>☐ millions of immigrants | millions of immigrants |

29.

REFER TO PANEL 6

The graph clearly pictures marriage and divorce patterns in these states.

Which state has the highest number of divorces?

_____

California

New York has the lowest number of divorces. This does not necessarily mean that fewer New York residents (people who live in New York) get divorced. It means that not many New York residents get divorced <u>in</u> New York State. Because New York has strict divorce laws, its residents often go to Mexico or to another state to obtain a divorce. Therefore, bars on this graph really indicate:

- ☐ how many divorced people live in these states
- ☐ how many people were actually divorced in these states in 1962

how many people were actually . . .

| | |
|---|---|
| 22.<br><br>REFER TO PANEL 5<br><br>A quick glance at the graph tells you several things about immigration for the total period of 1901 until 1950.<br><br>The largest number of immigrants came to the United States during the years of _____.<br><br>In 1920, the United States passed a law restricting immigration. In the decade (10-year period) following, immigration:<br><br>☐ decreased<br>☐ increased | <br><br><br><br>1901 - 1910<br><br><br><br>decreased |
| 23.<br><br>REFER TO PANEL 5<br><br>Graphs are often used to show <u>trends</u> -- the general direction something takes. What is the general trend of immigration from 1901 until 1940?<br><br>☐ it decreases steadily<br>☐ it increases steadily<br>☐ it shows a pattern of increases and decreases | <br><br><br><br>it decreases steadily |
| 23a.<br><br>REFER TO PANEL 5<br><br>During which years did the general trend indicated by this graph change?<br><br>☐ 1901 - 1910<br>☐ 1911 - 1920<br>☐ 1921 - 1930<br>☐ 1931 - 1940<br>☐ 1941 - 1950 | <br><br><br><br><br><br><br><br>1941 - 1950 |

28.

REFER TO PANEL 6

This graph has double bars, and you can see that it compares two things. The bars are lined up in pairs so that you can see the comparison easily.

FIND the legend below the bar graph. It tells you what is being compared.

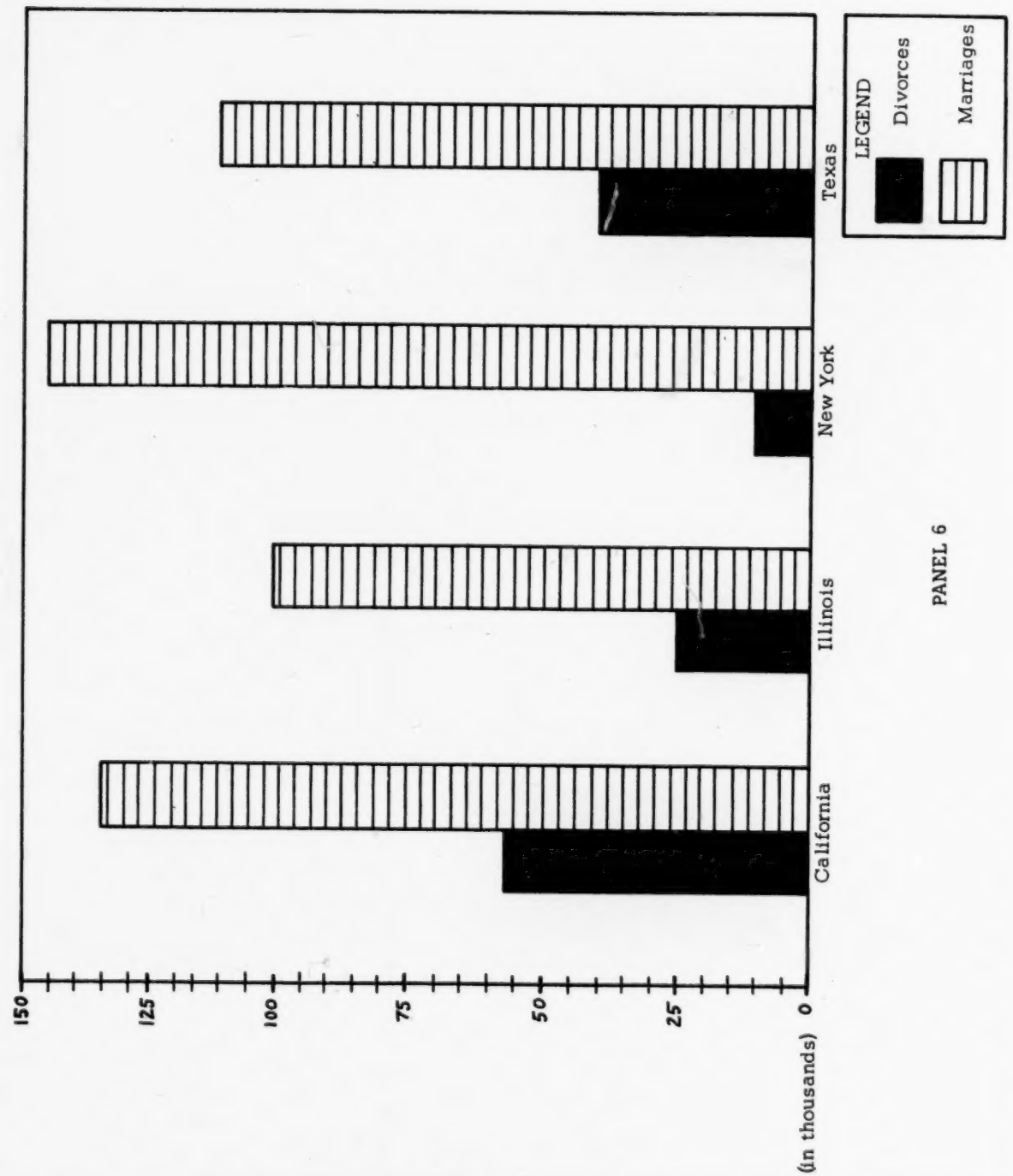
represents _____ divorces

represents _____ marriages

The graph compares 1962 figures for four states. What is the most accurate (most exact) title for this graph?

- ☐ 1962 Trends in the United States
- ☐ Comparisons of Divorces and Marriages
- ☐ 1962 Marriages and Divorces in Four States

1962 Marriages and Divorces . . .


LEGEND
Divorces
Marriages
Texas
New York
Illinois
California
150
125
100
75
50
25
0
(in thousands)

PANEL 6

27.

REFER TO PANEL 5

FIND the bar for 1911-1920 and draw an imaginary line from the bar to the number scale. What is the best estimate of the number of immigrants that came to this country between 1911 and 1920?

- ☐ 5.5 million
- ☐ 5.7 million
- ☐ 5.9 million

5.9 million

Now LOOK at the bar for 1921-1930. What is the best estimate for the number of immigrants who came to the United States during that period?

- ☐ 4.1 million
- ☐ 4.3 million
- ☐ 4.5 million

4.3 million

24.

REFER TO PANEL 5

The number scale on the left side of the graph tells you the numbers represented by the bars.

LOOK at the number scale. You will see that only the heavy lines are numbered. What does number 1 stand for?

- ☐ 1 immigrant
- ☐ 1 million immigrants
- ☐ 1 thousand immigrants

1 million immigrants

25.

In this frame and the following you will learn how to interpret what the bars represent.

What is the middle number between 1 million and 2 million?

- ☐ 1.2 million
- ☐ 1.3 million
- ☐ 1.5 million
- ☐ 1.7 million

1.5 million

Now, REFER TO PANEL 5

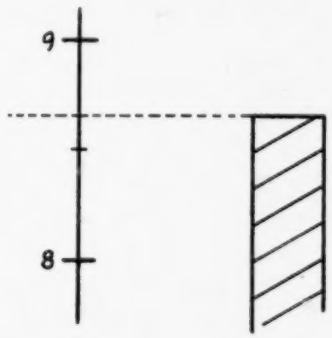
The light line between heavy lines 2 and 3 on the number scale stands for:

- ☐ 2.5 million immigrants
- ☐ 2.8 million immigrants
- ☐ 3.5 million immigrants

2.5 million immigrants

26.

If you drew a line from the top of the 1901-1910 bar to the number scale, it would look like the dotted line below.




To get the approximate number of immigrants between 1901-1910, you would have to <u>estimate</u> (make a rough guess). Knowing that the number lies between 8.5 and 9 million, what is the best estimate?

- ☐ 8.5 million
- ☐ 8.7 million
- ☐ 8.9 million

8.7 million

PM 431 - 29

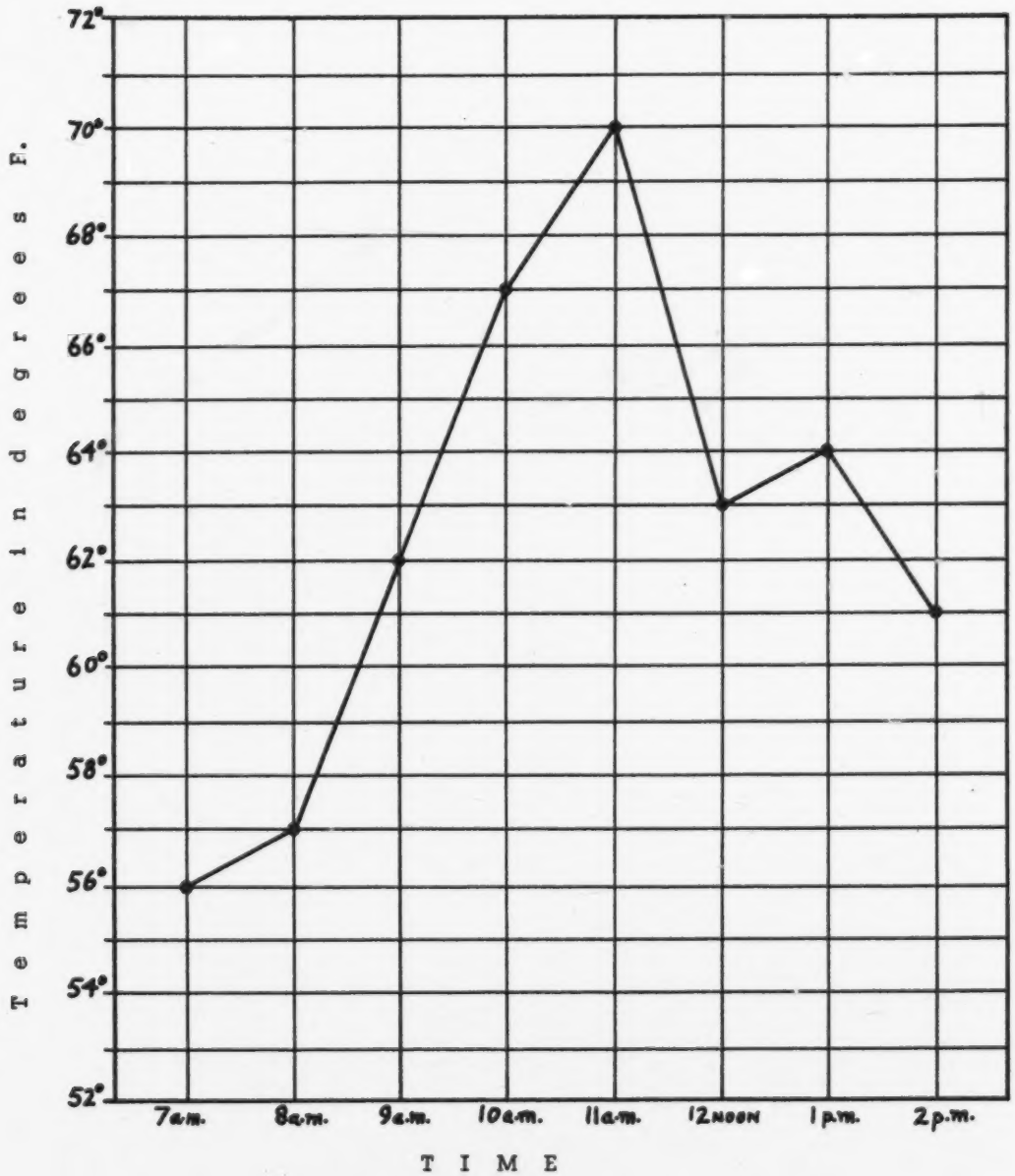
# ADVANCED GENERAL EDUCATION PROGRAM

## A HIGH SCHOOL SELF-STUDY PROGRAM

**LINE GRAPHS**
LEVEL: II
UNIT: 1
LESSON: 2

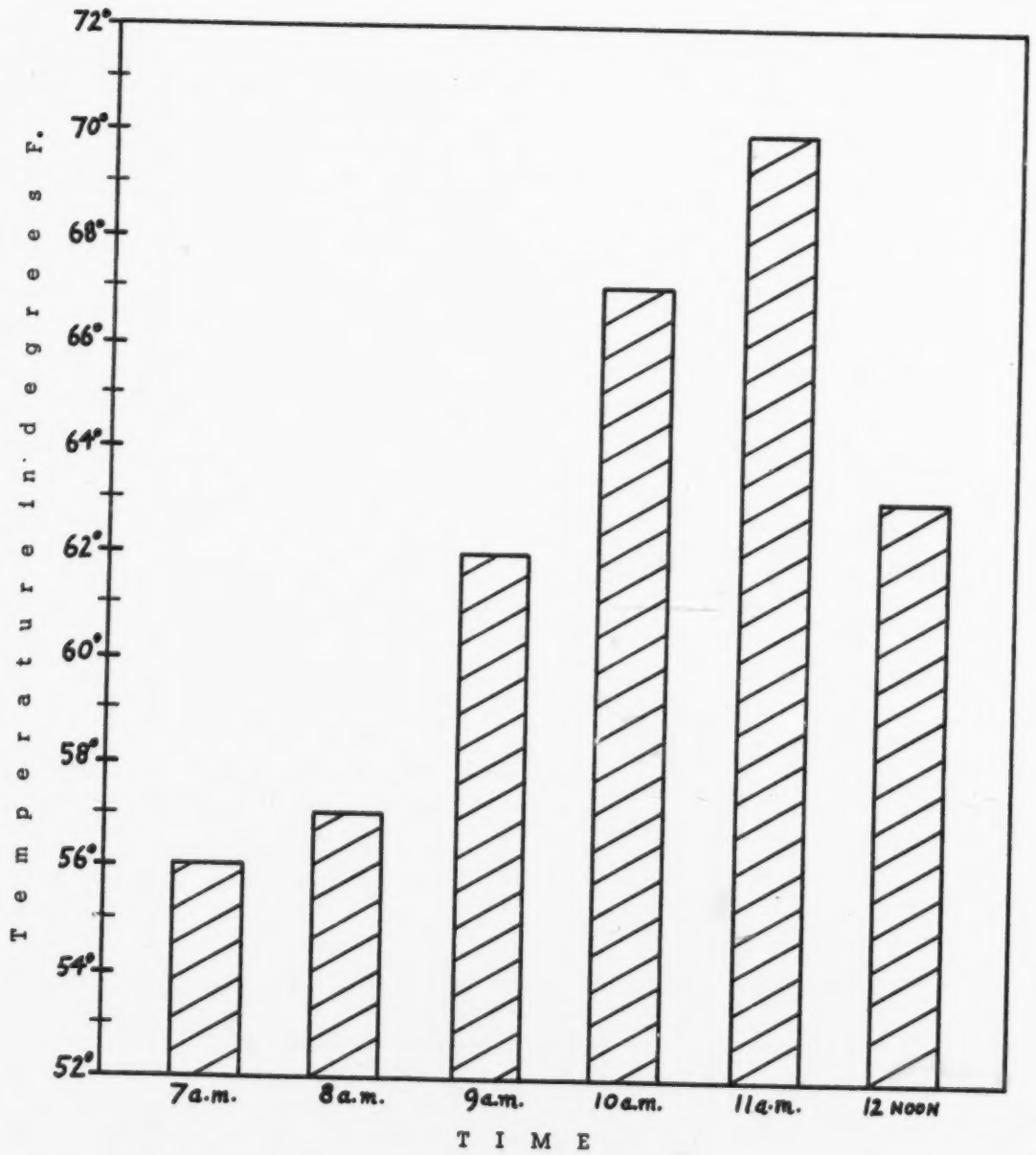
U.S. DEPARTMENT OF LABOR
MANPOWER ADMINISTRATION, JOB CORPS
NOVEMBER 1969

U.S. DEPARTMENT OF LABOR
MANPOWER ADMINISTRATION, JOB CORPS
NOVEMBER 1969




PANEL 8, Part 2 - MORNING TEMPERATURE, N.Y.C., March 20, 1965

41




PANEL 8, Part 1 - MORNING TEMPERATURE, N.Y.C., March 20, 1965

| | |
|---|---|
| 1.<br><br>In the last program you took, you learned about two distinct ways to present <u>statistical</u> information. You learned that figures could be shown in tables and on graphs.<br><br><u>Statistical</u> information consists of:<br><br>☐ a group of figures<br>☐ groups of figures that are numerical facts | groups of figures that are . . . |
| 2.<br><br>The <u>statistics</u> or factual figures you studied in the last lesson were either given in tables or shown as numbers on a scale that made up one side of the graph.<br><br>The scale could be used to find out:<br><br>☐ what number the height of a bar stood for<br><br>☐ what the bar itself stood for (for example, years or states) | what number the height . . . |
| 3.<br><br>REFER TO PANEL 8, Part 2<br><br>Panel 8 has two graphs showing the same information. The first, as you know, is a bar graph. The other is called a <u>line graph</u>.<br><br>NOTICE that the information on the left side and at the bottom of each graph is the same.<br><br>FIND the point on the line graph for 9 A.M. What is the temperature for that hour? _____<br><br>FIND the bar on the bar graph for 9 A.M. What is the temperature? _____<br><br>The points on the line graph and the height of the bars on the bar graph:<br><br>☐ stand for different things<br>☐ stand for the same thing | 62°<br><br>62°<br><br>stand for the same thing |

4.

REFER TO PANEL 8, Part 1

Panel 8 gives you information about:

- ☐ average March temperature in New York City
- ☐ temperatures on one morning in March in New York City

temperatures on one . . .

You can answer these questions by looking at either graph:

The temperature at 10 A.M. was _____.

67°

The highest temperature for the morning was _____.

70°

This occurred at what time?_____

11 A.M.

5. In which 2 years were there 1000 more deaths caused by firearms than by poisonous gases?

   a. _____

   b. _____

6. The graph indicates that the number of accidental deaths caused by firearms:

   a. ☐ dropped steadily until 1964

   b. ☐ fluctuated a great deal more than the number caused by poisonous gases

   c. ☐ was in close proportion to the number caused by poisonous gases

   d. ☐ went down in 1962, only to rise again in 1963

7. Select the most accurate (according to the graph) estimation of the future trend of accidental deaths by poisonous gases.

   a. ☐ It's clear that accidental deaths of this nature are decreasing every year. In 1963 alone, the number of deaths decreased by 200.

   b. ☐ It looks like accidental deaths by poisonous gas are on the decrease, but it looked that way in 1961 and they went way up.

   c. ☐ While the number of accidental deaths by poisonous gas decreased from 1,500 to 1,300 in one year, this does not indicate a trend downward. On the contrary, it definitely indicates the time has come for another increase.

Time completed _____

WHEN YOU HAVE FINISHED THIS TEST, WRITE DOWN THE TIME. THEN TAKE THE LESSON TO YOUR INSTRUCTOR OR HIS ASSISTANT FOR CHECKING. WAIT UNTIL THE LESSON IS APPROVED BEFORE GOING ON TO THE NEXT LESSON.



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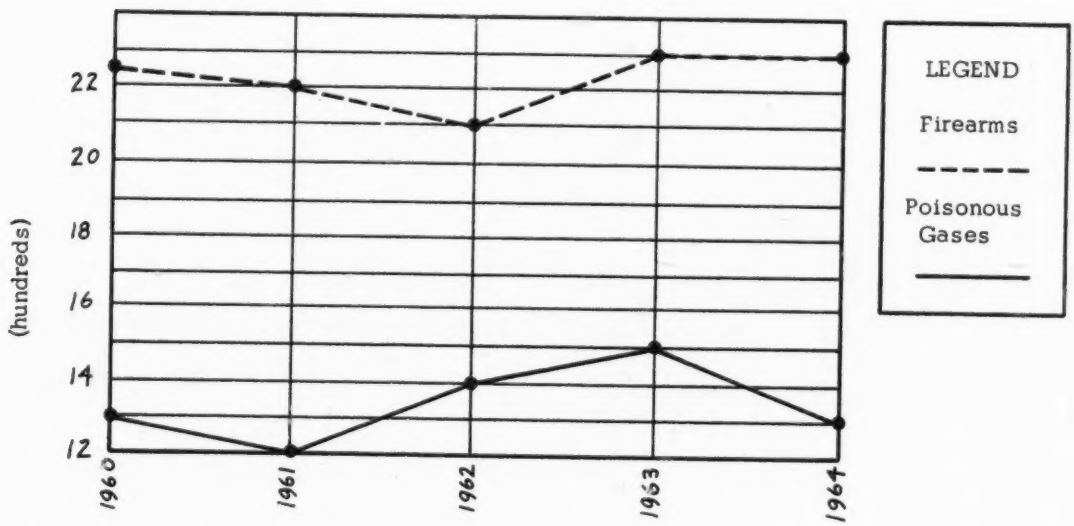
| | |
|---|---|
| 5.<br><br>REFER TO PANEL 8<br><br>LOOK at the line graph in Panel 8. The direction in which the line moves along the graph shows whether the temperature went up or down. If the temperature went from 56° to 57°, the line would go:<br><br>☐ up<br>☐ down<br><br>Between 7 A.M. and 11 A.M., the temperature:<br><br>☐ went steadily up<br>☐ went steadily down<br>☐ went both up and down<br><br>After 11 A.M., the temperature:<br><br>☐ went steadily up<br>☐ went steadily down<br>☐ went both up and down | up<br><br>went steadily up<br><br>went both up and down |
| 5a.<br><br>REFER TO PANEL 8, PART 2<br><br>What was the temperature at 9 A.M.?<br>_____ | 62° |
| 5b.<br><br>REFER TO PANEL 8, PART 2<br><br>How many degrees did the temperature rise from 9 A.M. to 10 A.M.? _____ | 5° |

5

2 Principal Causes of Accidental Deaths in the United States




1. **In what year did deaths caused by both firearms and** poisonous gases decrease? _____

2. In 1962, how many deaths were caused by poisonous gases? _____

3. In which year was the difference between the number of deaths caused by firearms and the number caused by poisonous gases the smallest?
_____

4. If you were campaigning for a law to limit the sale of firearms, the statistics for what year would you use to show how dangerous firearms are?

   a. ☐ 1961

   b. ☐ 1962

   c. ☐ 1963

5c.

REFER TO PANEL 8, PART 2

What was the change in temperature between 1 P.M. and 2 P.M. ?

- ☐ up 3 degrees
- ☐ down 3 degrees
- ☐ up 64 degrees
- ☐ down 64 degrees

down 3 degrees

6.

REFER TO PANEL 8

In the previous lesson you learned that a <u>trend</u> was a general direction or pattern.

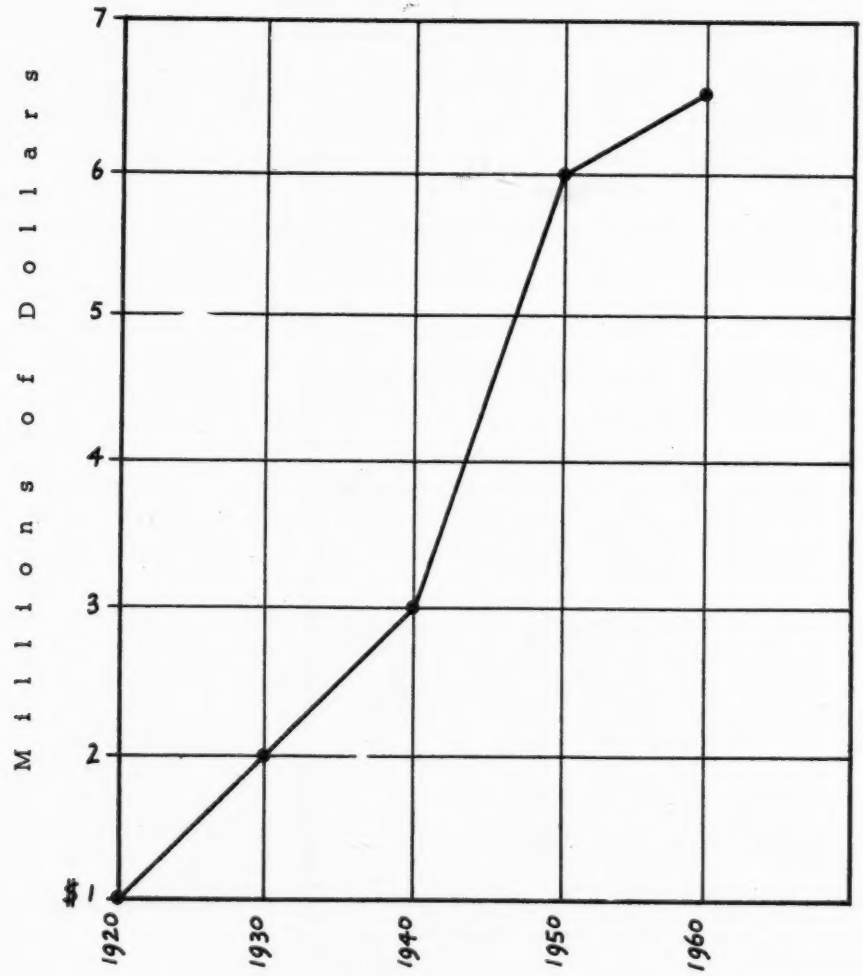
In these graphs you have very specific information: the exact temperatures for a certain morning. Because the figures involved cover such a small range (only 52° to 72°), the graphs don't really show a trend. They show exactly what happened that morning.

To find out the trend for morning temperatures during the month of March, you could look at several line graphs for March. If the line on these graphs was <u>always similar</u>, you could estimate that the trend for March morning temperatures was:

- ☐ to rise rapidly (several degrees) after 7:00 A.M., remain steady for a few hours and then drop down again
- ☐ to rise slowly from 7:00 A.M. onwards, reaching a peak about 11 A.M. and then dropping off

to rise slowly from 7:00 . . .

- ☐ to start off high at 7:00 A.M., drop a few degrees and then steadily increase until 2 P.M.




PANEL 9, 40 YEARS OF AUTOMOBILE FACTORY SALES IN THE UNITED STATES

7.

REFER TO PANEL 9

What was the sales trend for automobile factories between 1920 and 1960?

- ☐ it steadily decreased
- ☐ it steadily increased
- ☐ it fluctuated (went up and down)

it steadily increased

CHECK the possible reasons for this trend.

- ☐ cars are much more expensive in 1960 than they were in 1920

cars are much more . . .

- ☐ methods for manufacturing became increasingly more efficient

methods for manufacturing . . .

- ☐ the standard of living in the United States steadily increased; more and more people could afford cars

the standard of living . . .

- ☐ World War II (1938-1945) prevented the manufacture of automobiles

## MASTERY TEST

Time started _____

8.

REFER TO PANEL 9

From 1930 to 1940, sales rose:

- ☐ $1 million
- ☐ $3 million
- ☐ $5 million

$1 million

LOOK at the line representing the number of sales for 1950 - 1960. How does it compare with the line for 1930 - 1940?

- ☐ it rises less
- ☐ it rises more
- ☐ it is the same

it rises less

From 1950 to 1960, sales rose:

- ☐ equally as much as they rose between 1930 and 1940
- ☐ half as much as they rose between 1930 and 1940
- ☐ twice as much as they rose between 1930 and 1940

half as much as they rose . . .

9

33

REFER TO PANEL 13

If passing score on this test was 60%, approximately what percentage of the girls passed the test?

- ☐ 10%
- ☐ 20%
- ☐ 30%
- ☐ 50%

30%

This type of graph would be best used to:

- ☐ give detailed information about individual test scores
- ☐ show generally how a large group of people did on a test

show generally how . . .

Time completed _____

YOU HAVE NOW FINISHED THE FIRST PART OF THIS LESSON. WRITE DOWN THE TIME. THEN, AFTER YOU HAVE REVIEWED THE MAIN IDEAS IN THE FOLLOWING SUMMARY, TAKE THE MASTERY TEST AT THE END OF THE BOOKLET.

9.

REFER TO PANEL 9

In 1940, sales totaled:

- ☐ three thousand dollars
- ☐ three million dollars
- ☐ three billion dollars

three million dollars

What was the value of sales in 1930? _____

$2 million

How much of an increase in sales took place between 1930 and 1940? _____

$1 million

When did the greatest increase in sales take place? Between:

- ☐ 1920 and 1930
- ☐ 1940 and 1950
- ☐ 1950 and 1960

1940 and 1950

How great was the increase? _____

$3 million

In what year did sales reach $2 million? _____

1930

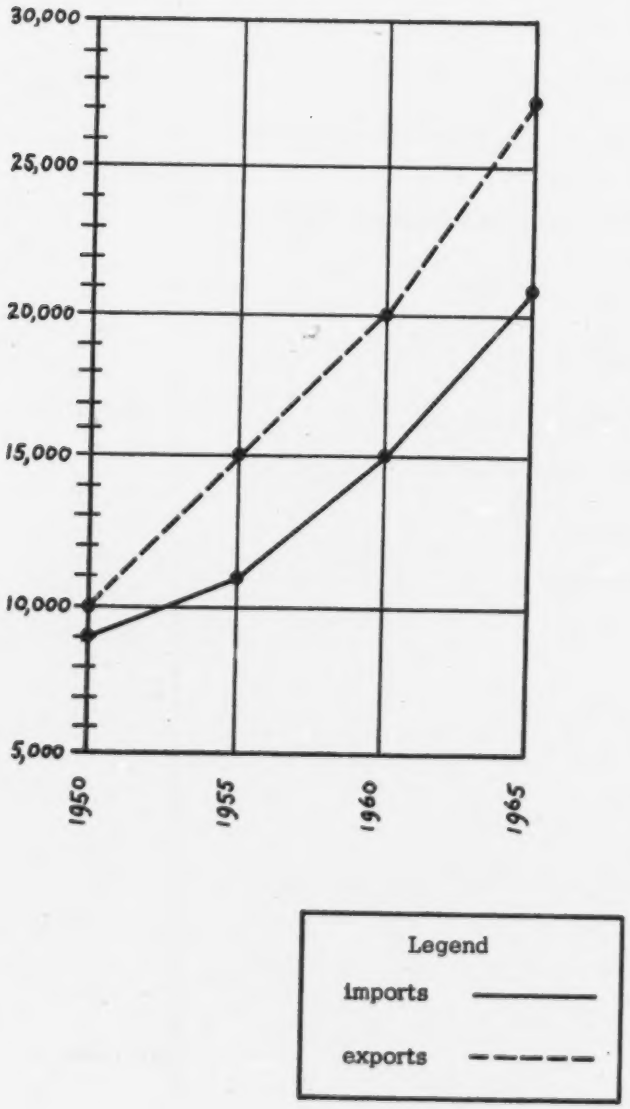
From 1930 to 1950, sales:

- ☐ remained the same
- ☐ doubled
- ☐ tripled

tripled

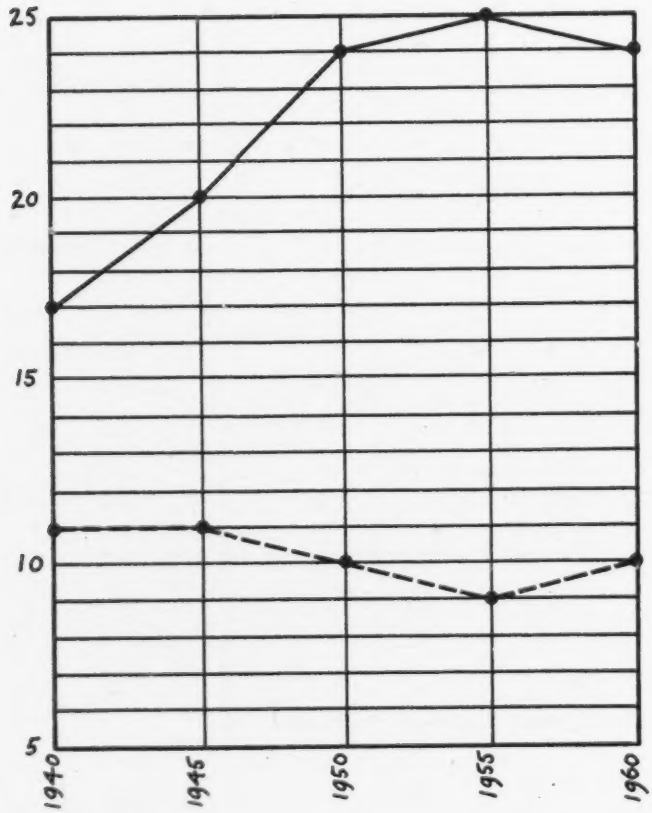
10

PANEL 10, UNITED STATES' IMPORTS AND EXPORTS IN MILLION OF DOLLARS



| | |
|---|---|
| 10.<br><br>REFER TO PANEL 10<br><br>FIND the legend on this graph. The dotted line represents _____.<br><br>What was the trend in imports for the years 1950 to 1965?<br><br>☐ they decreased<br>☐ they increased<br><br>The value of <u>imports</u> was:<br><br>☐ always higher than the value of exports<br><br>☐ always lower than the value of exports<br><br>☐ sometimes higher and sometimes lower than the value of exports<br><br>How do export trends compare with import trends during the period shown on the graph?<br><br>☐ they show the opposite trend<br>☐ they show the same general trend | exports<br><br>they increased<br><br>always lower than the . . .<br><br>. . . same general trend |
| 11.<br><br>REFER TO PANEL 10<br><br>In what year was the greatest amount of money paid for exports? _____<br><br>What was the amount? _____<br><br>In that year how much money was paid for imports? _____<br><br>By how many millions were exports <u>greater</u> than imports that year? _____ | 1965<br><br>$27,000 million<br><br>$21,000 million<br><br>$ 6,000 million |

PANEL 11, UNITED STATES BIRTH RATES AND DEATH RATES




Legend

death rate (per 1,000 people) - - - - -

birth rate (per 1,000 people) ———

57

12.

REFER TO PANEL 10

What was the increase in imports from 1950 to 1955?

_____

$2,000 million

The largest increase in imports took place between:

- ☐ 1950 and 1955
- ☐ 1955 and 1960
- ☐ 1960 and 1965

1960 and 1965

The largest increase in exports took place between:

- ☐ 1950 and 1955
- ☐ 1955 and 1960
- ☐ 1960 and 1965

1960 and 1965

If you evaluated the economy of the United States in terms of imports and exports, you could say the economy grew:

- ☐ stronger
- ☐ weaker

stronger

13.

REFER TO PANEL 11

What is being compared to this line graph. (LOOK at the legend before answering this question.)

- ☐ births and deaths
- ☐ birth rates and death rates

birth rates and death rates

32.

REFER TO PANEL 13

The group that had the highest average on the test was the:

- ☐ boys
- ☐ girls

boys

How many students received a score of 100%?

_____

0

The graph validates* which of the following statements:

- ☐ All the boys' scores were higher than any of the girls.
- ☐ All the students passed the test because the score was 60%.
- ☐ In this test, the boys generally did better than the girls.

In this test, the boys . . .

*Validates - shows to be true.

14.

To understand Panel 11, it is important to understand <u>birth rate</u>. First, we will discuss the meaning of rate in other contexts.

If you drive a car at the <u>rate</u> of 60 miles per hour:

- ☐ you are going at a speed that is measured in terms of time (1 hour) and distance (60 miles)
- ☐ you must have just travelled 60 miles

you are going at a speed . . .

15.

Many things are measured by rates. For example, if you worked at the rate of 3 lessons per day, this would mean that you completed:

- ☐ one lesson a day for three days
- ☐ one lesson every three days
- ☐ three lessons a day

three lessons a day

31.

REFER TO PANEL 13

Panel 13 shows how a class in school did on a certain test. This is another kind of line graph, called a distribution curve. The curve shows how the scores were distributed.

The largest number of boys had scores of about:

- ☐ 50%
- ☐ 60%
- ☐ 70%
- ☐ 80%

70%

The largest number of girls had scores of about:

- ☐ 20%
- ☐ 40%
- ☐ 50%
- ☐ 80%

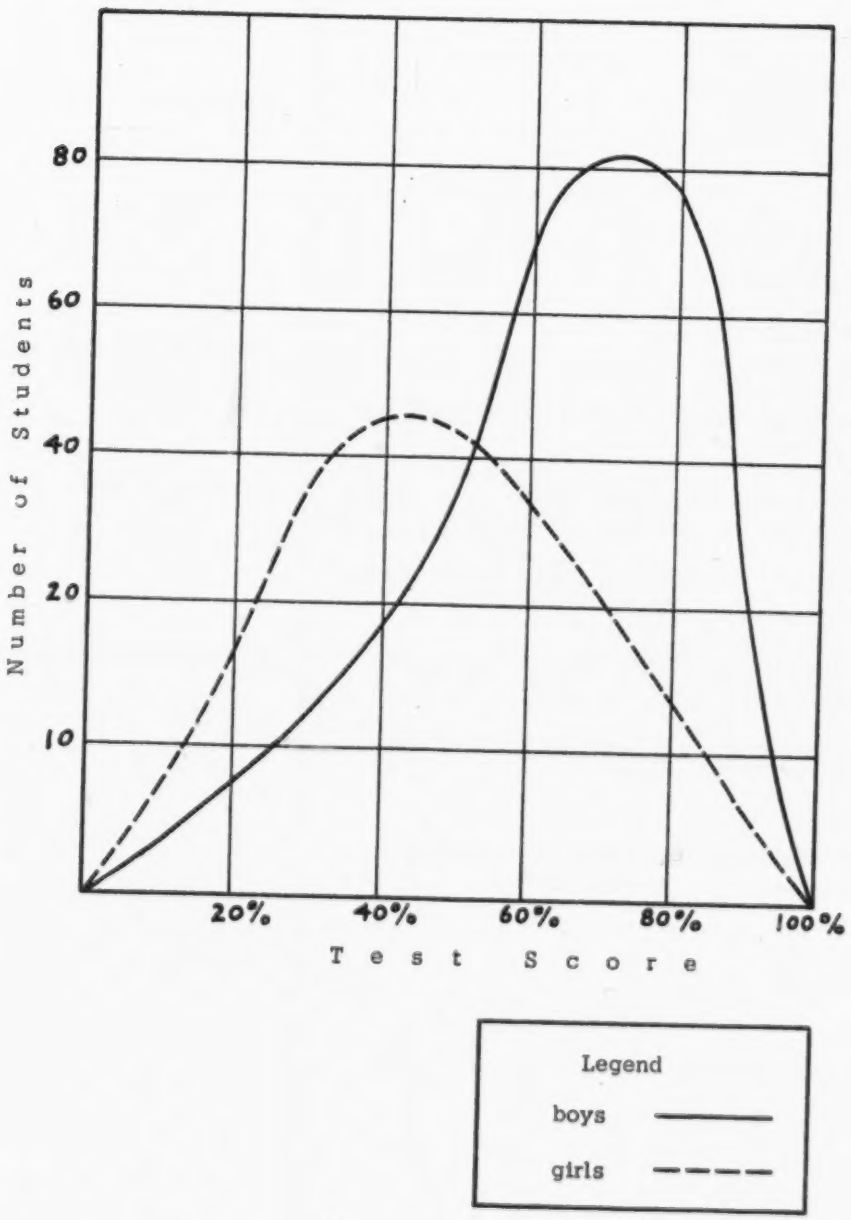
40%

Which group had more scores between 90 - 100%?

_____

boys

PANEL 13, FINAL TEST RESULTS FOR BOYS AND GIRLS



30

REFER TO PANEL 12

Between 1930 and 1940, the rate of increase in arrests:

- ☐ became larger
- ☐ became smaller
- ☐ fluctuated
- ☐ remained about the same

fluctuated

Between 1940 and 1965, the rate of increase in arrests:

- ☐ became larger
- ☐ became smaller
- ☐ fluctuated
- ☐ remained about the same

remained about the same

Which of the following statements can be justified* by the graph in Panel 12?

- ☐ The rate of arrests has increased steadily since 1930, except for the years 1935 - 1940.

The rate of arrests . . .

- ☐ There has lately been a tapering off in the increase in arrests in America.
- ☐ There were twice as many arrests in 1965 as in 1945.

There were twice as many . . .

- ☐ There were eight times as many arrests in 1960 as in 1930.

*To justify in this context means to prove that a statement is true with factual support.

| | |
|---|---|
| 16.<br><br>When things are measured by rate, they are measured in terms of other factors. It is <u>not</u> measured in terms of quantity alone.<br><br>Which of the following show that something has been measured by rate?<br><br>☐ 5 days a week<br>☐ 20 gallons of gas<br>☐ 55 miles per hour | 5 days a week<br><br>55 miles per hour |
| 17.<br><br>The rate of speed at which you drive is not the same thing as the number of miles you travel.<br><br>A <u>birth rate</u> is not the same thing as the figure for total number of births. Refer to Panel 11 and LOOK at the <u>legend</u> only. It tells you that the birth rate is based on:<br><br>☐ the average number of births a year<br><br>☐ the number of births per year<br><br>☐ the number of births per year per 1,000 | . . . per 1,000 people |
| 18.<br><br>REFER TO PANEL 11<br><br>The birth and death rates on this graph are based on a count of 1,000 people. If the birth rate for a certain year is <u>10 to a 1,000</u>, it means that 10 people are born for every 1,000 people.<br><br>What part of the graph shows you how many people were born and died for every 1,000 people?<br><br>☐ the numbers at the bottom of the graph<br>☐ the numbers on the side of the graph | the numbers on the side . . . |

29.

REFER TO PANEL 12

Panel 12 shows a graph about:

- ☐ arrests since 1930
- ☐ crimes committed since 1930
- ☐ the increase in violence in the United States

The period during which the number of arrests remained the most stable* was:

- ☐ 1930 - 1935
- ☐ 1935 - 1940
- ☐ 1945 - 1950
- ☐ 1950 - 1955

Since 1930, the number of arrests has:

- ☐ doubled
- ☐ tripled
- ☐ increased by more than four times
- ☐ increased by more than five times

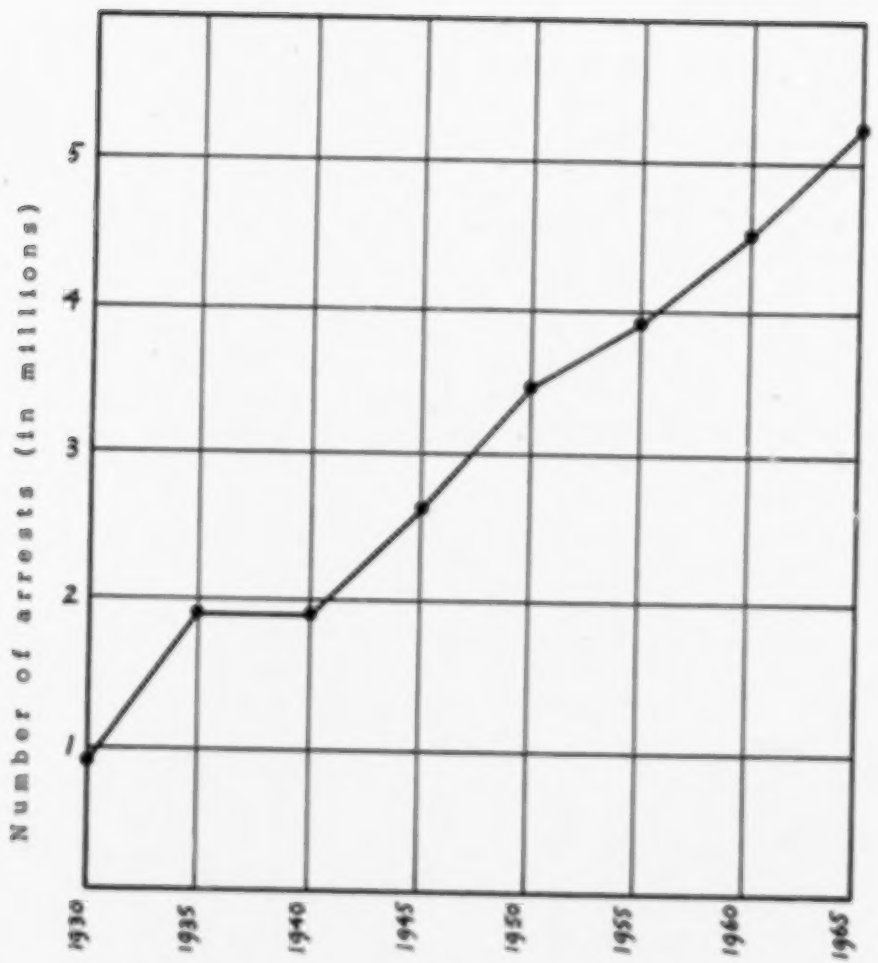
*Stable means remaining the same.

arrests since 1930

1935 - 1940

. . . more than five times

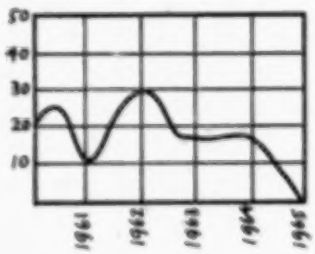
25

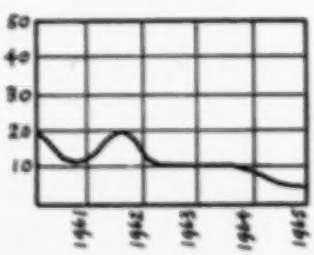


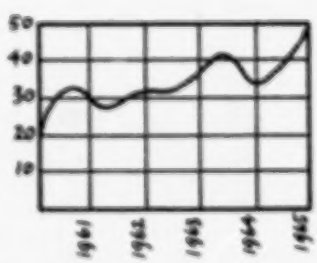

PANEL 12, ARRESTS IN THE UNITED STATES, 1930 - 1965

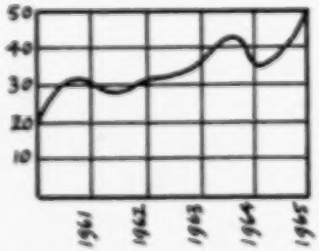
28.

Which of the following graphs shows a fluctuating rate of <u>increase</u>? (CHECK the starting point before you choose your answer.)

☐ 


☐ 


☐ 

| | |
|---|---|
| 19.<br><br>REFER TO PANEL 11<br><br>FIND the year 1960 on the panel. Then, FIND the dot representing the <u>birth rate</u> for that year. It is on number 24. This means that:<br><br>☐ 24 people were born for every thousand people that year<br><br>☐ 24 people were born in 1960<br><br>☐ 24 thousand people were born that year | 24 people were born for every . . . |
| 20.<br><br>REFER TO PANEL 11<br><br>The lines for birth and death rates indicate certain trends. CHECK the trends that seem to be true according to the graph:<br><br>☐ the birth rate <u>fluctuated</u> (went up and down) more than the death rate<br><br>☐ the birth rate has increased steadily since 1940<br><br>☐ the death rate has decreased since 1940<br><br>☐ there are more people being born than dying | the death rate has . . .<br><br>there are more people . . . |

| | |
|---|---|
| 26.<br><br>In a line graph, rate of increase is shown by how much the line rises. If there is a steep line upward, it shows a fast rate of increase.<br><br>If a line goes up gradually, it shows a:<br><br>☐ fast rate of increase<br>☐ fluctuating rate of increase<br>☐ slow rate of increase | slow rate of increase |
| 27.<br><br>When something fluctuates, it goes up and down. If the yearly rate of increase for tractor sales fluctuated, this means that:<br><br>☐ sales increased over the year but not evenly<br>☐ sales increased steadily over the year | sales increased over the . . . |

| | |
|---|---|
| 21.<br><br>If for every 1,000 people 25 are born and 10 die, then the population (per thousand) increases by 15. (When you add 25 and subtract 10, you still have 15.)<br><br>Thus, birth and death rate trends provide information about population increases and decreases.<br><br>WRITE I if the population increases and D if the population decreases in the following examples:<br><br>_____ For every 1,000 people, 5 die and 25 are born.<br><br>_____ For every 1,000 people born, 50 are born and 35 die.<br><br>_____ For every 5,000 people, 100 are born and 140 die. | <br><br><br><br><br><br><br><br>I<br><br>I<br><br>D |
| 22.<br><br>REFER TO PANEL 11<br><br>What was the birth rate in 1955? _____<br><br>What was the death rate in 1940? _____<br><br>In which year was the death rate the lowest? _____<br><br>Which year had the largest difference between the birth rate and the death rate? _____<br><br>How many more people were born in 1950 than died in 1950? (Give your answer per thousand people.)<br>_____<br><br>In which year did the population increase the least?<br>_____ | <br><br><br>25<br><br>11<br><br>1955<br><br>1955<br><br><br>14 people per thousand<br><br>1940 |

25.

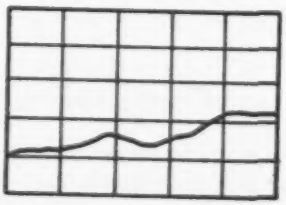
When a line goes up on a graph it shows an increase.
When it goes down it shows a decrease.

Rate of increase refers to how fast something goes up.
Rate of decrease refers to how fast something goes down.

Which graph shows a high rate of increase?

☐

☐

☐ 

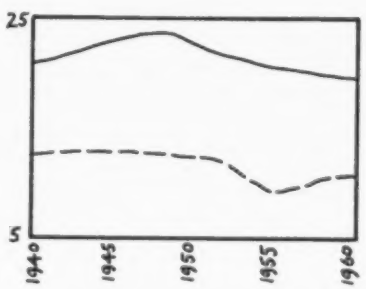
23.

REFER TO PANEL 11

The graph on Panel 11 shows that the death rate is always lower than the birth rate.

If, in 1945, the death rate had suddenly jumped up to 25, instead of remaining at 11, how would the graph have looked?

☐

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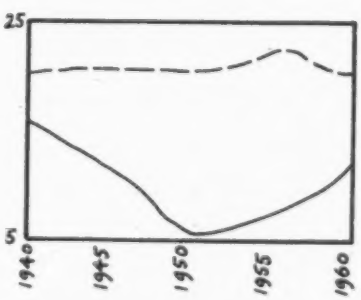


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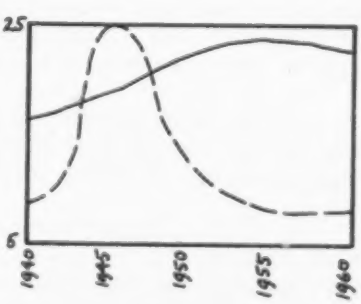
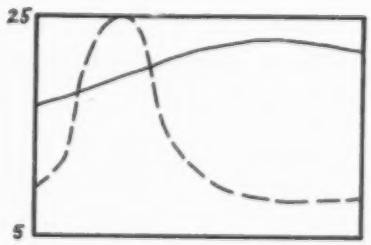



This would have resulted in a(n):

☐ decrease in population
☐ increase in population




decrease in population

72

24.

REFER TO PANEL 11

Which of the following statements is an accurate interpretation of the graph?

- ☐ If the birth and death rate trends can be reversed from the directions taken in 1955-1960, our population problem will resolve itself.
- ☐ If the trends in birth and death rate over the past 20 years continue, the population will double in five years.
- ☐ The slight decrease in the birth rate from 1955-1960, may indicate a trend away from our ever increasing population problem, but only the future will tell.

The slight decrease in the . . .

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